

**SECRET**NPIC/P&DS/D/6-1357  
9 May 1966

## MEMORANDUM FOR THE RECORD

X1 SUBJECT: Evaluation of the ☐ Multiple Image Correlator

1. Under ☐ a Breadboard Model of a Multiple Image Correlator was developed to demonstrate a practical and productive use of the laboratory proven principle of Multiple Image Correlation. This principle reduces the graininess of photo images and improves image definition by precisely aligning (registering) multiple photographic images, taken of the same subject from identical exposure stations, and integrating their images on a single print. In this process the random non-image grains (noise) integrate at a lower rate than the image grains, thereby increasing the signal-to-noise ratio.

X1 The ☐ Multiple Image Correlator was designed to incorporate this principle in a device that would produce two through eight projected superimposed images onto a single viewing and exposing station. Registration of the individual images was to be accomplished by performing a manual coarse alignment and then achieving precise image registration through an automatic electronic correlation system. During the contract, all efforts to get proper functioning of the electronic correlation system failed. Consequently, the breadboard model, at completion of the contract, was brought into the Center to determine the practicality of utilizing the manual method of registration. The machine has been in the Center for almost 3 years and limited success has been achieved. However, it has been determined that there is no practical application for the equipment for the following reasons;

- a. The operation of registering the multiple images is extremely tedious and time-consuming.
- b. The optical system of the breadboard is so poor that only the very center of the images can be registered.
- c. The machine vibrations prevent maintaining image alignment. At the very best, only three out of the eight images are in register at any given time.

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2. It is felt that the breadboard model of the multiple image correlator will never have any practical application. All experimentation and testing has long ceased and the equipment is occupying useable space in the equipment test room. It is therefore recommended the Multiple Image Correlator be declared surplus and salvaged. The device does contain two useful D.C. Power Supplies. It is recommended these power supplies plus any other useable components be removed by EPD/DB/P&DS for their use and the remainder of the correlator be removed from  for subsequent disposal.

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3. The principle of Multiple Image Correlation is sound and further investigation of a practical application should continue. However, the existing breadboard cannot be used in any follow-on effort.

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Support Systems Section

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